THE WISCONSIN ARCHITECT

THE OFFICIAL PUBLICATION OF
THE STATE ASSOCIATION OF WISCONSIN ARCHITECTS
WISCONSIN CHAPTER OF THE AMERICAN INSTITUTE
OF ARCHITECTS

Minutes of April Meeting

A Problem for Engineering Societies

Condensation in Walls and Attics

Vol. 6 May, 1938 No. 5

A Problem for Engineering Societies

AN EDITORIAL

Unification

The unification of a profession is a necessity, it will automatically eliminate duplication of effort, create a national organization that can adequately represent its members in Washington, distribute proper publicity and work for proper legislation, both state and federal, to regulate their contact with their clients and the legislative bodies. Below is an editorial on this subject as it applies to the engineers' societies. It is worth reading.
—Ed.

Some time ago, Dr. Arthur Simon suggested that a committee of the *Engineers' Society of Milwaukee* be appointed to study the feasibility of entering into some program of cooperation or affiliation with the *Engineering Society of Wisconsin*. The committee was appointed. Time marched on, but progress didn't. Last year the question again arose, and President Rohde appointed a committee to make the same study. The committee never met, so it cannot be accused of wasting time. Last month the same question raised its insidious head, and the board of directors, running true to form, suggested that a committee be appointed, whereupon President Ferebee selected a new committee to make the study. We do not know what this committee will do, but we do know that it is time that we did a little thinking along the lines of Engineering Societies and their influence with the public and with governmental units.

Nationally, we have various learned societies such as the A.I.E.E., A.S.M.E., A.S.R.E., A.S.C.E., etc. Many of the societies share the same library and building for national headquarters. They cooperate in some projects and the relationships are most friendly, but there is no definite centralized authority. The American Engineering Council at Washington, D. C., is to a certain extent a coordinating body, and the council membership includes many National, State, and Local Societies. The American Engineering Council renders good service but has no executive jurisdiction.

In Wisconsin we have Sections and Branches of various National Societies. We also have the *Engineering Society of Wisconsin*, another professional society which requires state registration of its members, and the *Engineers' Society of Milwaukee* and its affiliates, but we have not only no central body, but not even a coordinating group.

It has been pretty well demonstrated that in our present day and age, results are accomplished by cooperative mass pressure of a large group rather than by individual effort. This is especially true regarding things political. We have had instances of this fact recently in our own experiences. A splendid presentation to a Common Council Committee by a Committee from our Society attempted to obtain an addition to the ridiculously paltry appropriation made to the Public Library Science Room. No results were obtained. On another occasion our representatives presented an offer of service regarding a purely engineering question involving the 35th Street Viaduct, and we were rudely advised to immerse ourselves beneath the surface of our beautiful lake. The reason for the ungenerous reception of our delegates is plainly the fact that we are a small detached group controlling but a few votes per precinct.

A desirable procedure at this time would be to study the organization plans of the Societies of the other professions. The American Bar Association is, perhaps, not representative as they number only 28,400 members out of 144,065 lawyers in the country.* Perhaps in the case of attorneys, their proximity to and membership in law-making bodies is in itself sufficient self-protection.

The Medical Societies are much more representative. The American Medical Association has a membership of 102,715 out of a total of 140,398 licensed physicians. Their general organization plan is:

1. The fundamental unit is the County Medical Association. The County Association is practically an independent unit, elects its own officers, maintains its own offices and services, often publishes its own Journal, controls its own finances, and determines its own qualifications for membership. Its members when elected automatically become members of the State and of the National Associations.
2. The State Medical Association is governed by delegates elected from the County Associations. The State Association maintains a state office, renders services, and controls its own policies and finances.
3. The National Association is governed by delegates from the State Associations. It maintains National offices, publishes its directory and Journal, and is the powerful National influence representing the entire Medical Profession.

Applied to Milwaukee and the State of Wisconsin we find that practically all recognized and capable physicians and surgeons in our county are members of the County Association and that the Association has a considerable influence in public affairs. It gives definite attention to political issues and knows the position of candidates for public office on affairs pertaining to medical interests.

The State Association has a decided influence in state public affairs and maintains an effective lobby organization. It is of interest to note that last year the Wisconsin State Medical Association shows in its treasurer's report° total receipts of $45,670.03 to the General fund and $3,434 for a Medical Defense fund. Expenditures included $39,061.35 from the General fund and $3,166.74, most of the latter being attorneys' fees.

The Defense fund is beyond doubt a legitimate lobby, and in a way, the entire State office is maintained for service and justifiable lobby. This year the State budget shows an additional estimated $22,000.00 to be raised by a special assessment of $10.00 levied on each of its 2,257 members. Of this amount $11,475 is allotted to a committee to study Hospital Insurance; $2,500 to study Distribution of Sickness Care in Wisconsin; $4,000 to study Sickness Care Abroad for three to four months; and the remainder of the assessment is allotted for the General fund and stenographic service.

The American Engineering Council, through its member Societies, has a membership of 71,875 out of a potential 176,000 engineers who are eligible for membership in the various societies. The American Engineering Council states as its policy that it is "a non-

* Data as to membership in the American Bar Association, etc., from an address by Dean A. A. Potter delivered at the Annual Assembly of the American Engineering Council, Washington, D. C., January 15, 1938. See report in **Milwaukee Engineering,** February 1938, p. 6.

° The Wisconsin Medical Journal, December, 1937.

partisan fact-finding agency for the expression of engineering opinion on those public questions in which engineers may have a viewpoint in the public interest as citizens as well as professional men." To a certain extent, this means that the Washington office has functions in obtaining and disseminating information and maintaining a legitimate lobby. The budget of the American Engineering Council shows an estimated expense for 1938 of $40,362.00, of which approximately $29,000 is allotted to salaries. We do not know the cost of political activities of the national office of the American Medical Association. However, we note that their operating expenses are divided between the cost of issuing the "Journal" and the so-called association and miscellaneous expenses. For the year ended December 31, 1936, the operating expenses of the "Journal" exclusive of depreciations were $898,-846.95.† The association and miscellaneous expenses totaled $620,411.30, of which we find an item, "Legal Medicine and Legislation, $36,279.90."

The *Engineers' Society of Milwaukee* has a legislative committee which is a volunteer group to which the Society pays a day's expenses of its chairman for an occasional trip to Madison.

The cost of dues to members in some Associations may look high, but the real question may not be the cost but what the Engineer gets for the money.

In comparing the Medical Association with the Engineering Societies we must appreciate at least two salient differences which affect the problem.

1. The great majority of medical men are in business for themselves, and their work is largely decentralized into thousands of independent units, while on the other hand the great majority of engineers are employed by manufacturing and utility corporations. This means that the engineers' interests are largely those of the corporations, and these identical interests are defended by the powers of the large corporations. The engineer is usually corporation-minded, rather than individually minded. The medical men may feel more keenly the need of a professional organization to care for the less powerful individual.

2. While historically engineering may have been the outgrowth of two divisions (Military Engineering and Civil Engineering), as far as engineering societies are concerned, the society organization started as specialized groupings: A.I.E.E., A.S.M.E., etc. The medical societies started as societies embracing the whole of the profession, and their members were all licensed to practice medicine. Engineers started and were trained as E.E.'s, C.E.'s, M.E.'s, etc. The medical men were all M.D.'s and the societies started as parent organizations.

In our day of specialization the Medical Society problem is to supply subsidiary groups for its specialists, while the Engineers' Society problem is to unite its specialized societies into a unified organization representing the *Engineer*.

Students of the science of organization know the advantages and the disadvantages of the centralized and of the decentralized forms of organization, and a study of the problem must, of course, take these into account.

Whether this means to form a new National Society, give more powers to the American Engineering Council, or adopt some other plan, is a question not to be solved by this editorial. In Wisconsin it may or may not be desirable for us to all become members of the present *Engineering Society of Wisconsin* with the *Engineers' Society of Milwaukee* as a member of the state society functioning as a county society.

Perhaps we should study the organization plan of our Canadian brethren whose Professional Societies are all grouped into one major Society known as the Engineering Institute of Canada.

We do not cry out "Engineers Unite" as a clarion call to present an "Engineers' Front," but we do state that a problem is facing us if we are to defend our own and the public's interests and command the respect to which our opinions are entitled.

—J. D. B.

Milwaukee Engineering—April 1938.

† The Journal of the American Medical Association, May 1, 1937.

Condensation in Walls and Attics

By L. V. TEESDALE, Senior Engineer,
Forest Products Laboratory,* Forest Service,
U. S. Department of Agriculture

Condensation or moisture accumulation within walls and in attics or roof spaces has become a subject of considerable concern to many home owners and prospective builders, especially in the states north of the Ohio River. This problem is not new; it has been known for many years that condensation occurs under certain conditions in houses and barns, particularly in localities subject to severe winter weather, but only recently has it become a general problem, particularly in the better class of construction. There have been so many cases in recent years that any prospective builder may hear about ice in attics, stained ceilings and side walls, plaster becoming loose, ruined decorations, decayed side wall, roof, studs, and sheathing, floors that have bulged up, outside paint failures, and numerous other manifestations of moisture resulting from condensation. While no doubt there is some exaggeration as to the extent of damage, there is also much truth. Such instances of damage have been occurring frequently in the last few years, particularly after the cold winter of 1935-36. In some instances the damage is visible, whereas in others it is concealed in the walls and unknown. Even new houses under construction in cold weather often show evidence of moisture, especially if plastered during the late fall or winter months.

Obviously the question arises as to why we hear so much more about this condition now than we used to just a few years ago. The answer is relatively simple. During the last few years there has been a marked tendency on the part of the architects, builders, and home owners to improve homes both new and old with the idea of increasing the comfort of the occupants and decreasing operating expenses. Prominent among these improvements are the increasing use of storm sash, insulation, weather strips, calking around windows and doors, and other means of decreasing heat loss and wind infiltration. Because of the tighter construction the normal humidity or vapor pressure within a house so constructed is higher than in houses less tightly constructed. In addition, as a health and comfort measure the normal humidity is usually augmented by evapor-

* Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

(Continued on page 6)

THE WISCONSIN ARCHITECT

Official Publication

The State Association of Wisconsin Architects

•

The Building Congress of Wisconsin

•

Wisconsin Chapter, The American Institute of Architects

LEIGH HUNT, Editor
152 W. Wisconsin Avenue, Milwaukee

JOHN S. HOLBROOK, Publisher
724 E. Mason Street, Milwaukee

Published Monthly Subscription, $1.00 per year

Address all communications for publication to Editor at 152 W. Wisconsin Ave., Milwaukee.

Minutes of the April Meeting

State Association of Wisconsin Architects

April 29, 1938

The regular monthly meeting of the Executive Board of the State Association of Wisconsin Architects was held at the Plankinton Hotel on Friday, April 29, 1938.

The meeting was called to order at 1:05 P.M., President Leigh Hunt presiding. Present were Messrs. Leigh Hunt, Wm. Mickelsen, Carl Eschweiler, Gregory Lefebvre, Walter Memmler, William Oppenhamer, Noel Ross Safford, F. J. Stepnoski, and A. L. Seidenschwartz. Represented by proxy were Messrs. C. Madsen and Emiel Klingler. Messrs. Herbert Tullgren, Frank Drolshagen, Urban Peacock, G. DeGelleke, Ellis Potter, and Frank Hoffman were absent. Mr. Roger Kirchhoff was also present. The reading of the minutes of the March 25, 1938, meeting was dispensed with, the minutes being approved as printed upon motion made by Mr. Memmler and seconded by Mr. Stepnoski. Motion carried.

COMMITTEE REPORTS

Publicity Committee:

Mr. Leigh Hunt gave a brief synopsis of the proceedings of the A. I. A. Convention held at New Orleans, La. His complete report as a delegate of our Association will be presented at the next Board meeting.

Educational Committee:

Mr. Carl Eschweiler, Chairman. Mr. Eschweiler reported that the Educational Committee held meetings and was working on a set-up for qualifications of office apprentices for each district in the State. It is the intention of the Committee to obtain the names of high school students desiring to follow the profession of Architecture and provide them with the necessary requirements and qualifications required of Architectural apprentices.

Legislative Committee: No report.

Practice Committee:

Mr. Wm. Mickelsen, Chairman. The Secretary read the minutes of the Practice Committee meeting held on Saturday, April 9, 1938, at the Milwaukee Elks club.

There was a general discussion on the method of operating the local Housing Guilds under the sanction of the Johns-Manville Company. Mr. Memmler reported that Mr. Sauer of the Interior Woodwork Co., Walter Wendland of the Johns-Manville Company, and Mr. Budzien of the Wisconsin Lumber Company called at his office and had a general discussion as to the operations of the Housing Guild. Mr. Kirchhoff stated that the intention of the set-up was sound, but it seems that those in charge of the local Housing Guild do not understand the proper procedure. It was moved and seconded that a letter be sent to the National Organization outlining to them the necessity of control of Subordinate Guilds. Motion was carried.

There was a general discussion relative to the designing of store fronts by the larger glass companies in the smaller communities of the State.

Mr. Memmler reported that owing to the fact that the Wisconsin Building Industries Advisory Council was busy working on W. P. A. and P. W. A. recommendations to the U. S. Government, the Contractors License Law was side-tracked for the time being.

The question of the proper policing of the State to uncover violations of the State Architects' and Engineers' Law was discussed. It was moved and seconded that a committee be appointed to work on this matter.

Wisconsin Construction Industries Advisory Council

Mr. Kirchhoff, a member of the Steering Committee of the Advisory Council, gave an outline of the purpose and expected result in combatting the inroads of the W. P. A. in the building construction industry.

1939 Milwaukee Home Show

Mr. Roger Kirchhoff, appointed Chairman of the 1939 Home Show, said it was his desire that the Architects take part in this show. Some discussion was had on this question, and it was felt that a display which would be of educational value to the public should be arranged. Mr. Kirchhoff stated that he had visited the permanent building display at the Merchandise Mart in the City of Chicago upon the suggestion of Mr. Seidenschwartz and that he was very much pleased with the building model display and felt that something of a similar nature to be sponsored by the Architects in connection with the Home Show would be a great success. The Secretary was instructed to write to the Chicago Exhibit and to the model manufacturers to ascertain the cost of such an exhibit.

In connection with the Home Show house, it was moved and seconded that a committee be appointed to ascertain how far the Architects would participate in the building of the next Home Show home and report back to the Board. Motion was adopted.

Housing Committee: No report.

State Public Works: No report.

The Annual Convention:

Several of the members of the Board felt that our State Annual Convention was held at the wrong time of the year and suggested that the Resolutions Committee make a study of this matter in regard to suggesting a change in the date for State Conventions—also the possibility of making it a two-day affair.

There being no further business to come before the meeting, same was adjourned upon motion made by Mr. Memmler and seconded by Mr. Lefebvre.

Meeting was adjourned at 4:30 P.M.

A. L. SEIDENSCHWARTZ, *Executive Secretary*

MILCOR COVE LATH

In Milcor Cove Lath, Milcor has produced a perfectly formed material which can be rapidly applied to wall or ceiling. It is made from 3.4 lb. Diamond Mesh Lath which is electrically welded to curved channel sections spaced 16 inches on center. The cove is made with radii of 6¾ inches, 8¾ inches and 10¾ inches for a finished plaster surface of 6, 8 and 10 inches.

There are numerous advantages to this pre-formed Cove Lath. It provides a better way to make perfect coves. It is simple and easy to use and saves all of the fussy time ordinarily consumed in cutting wood brackets and forming the cove on the job. It insures a steel base joining at wall and ceiling, and can be used over any type of base.

Literature on Milcor Solid Partition and Furring System and Milcor Cove Lath will be forwarded upon request.

ANNUAL PICNIC COMING

Watch for June Issue

(Continued from page 3)

ating water or some other means of winter air conditioning. Improvements that add to comfort and health are worth while and should not be discouraged, but it so happens that they introduce the unanticipated moisture problem just described.

A certain amount of water vapor is always present in the atmosphere. The maximum amount of water vapor that can be present depends upon the temperature of the air, being greater at higher temperatures. Air that is completely saturated with water vapor is said to be at its dewpoint temperature and its relative humidity is 100 per cent. Air not completely saturated with vapor is above its dewpoint temperature and its relative humidity is less than 100 per cent. Adding water vapor to unsaturated air without changing the temperature of the air will increase the relative humidity and raise the dewpoint temperature. Removing water vapor will have the opposite effects. Raising the temperature of air without changing the amount of water vapor in it will decrease its relative humidity. Lowering the temperature will increase the relative humidity till the dewpoint temperature is reached. Further lowering will cause progressive condensation of water vapor from the air.

The use of relative humidity as a measure of the amount of water vapor present in a given atmosphere is not satisfactory because this relationship varies with the temperature. Hence it is more practical to use the vapor pressure of the water vapor for this purpose, since it is a direct measure of the proportion of vapor present in the air. This property is usually expressed in terms of inches of mercury.

At zero degrees F. air will hold very little water vapor. If saturated air from out of doors at zero degrees temperature is introduced without adding moisture into a house heated at 70° F., the relative humidity will be about 5 per cent. However, there are sources of moisture within an occupied house, such as cooking, evaporation from plants, laundry work, respiration, and bathing, so that the normal relative humidity within a home may be about 10 to 15 per cent when the outdoor temperature is zero. Evaporation from a furnace pan or water pans on radiators may increase the humidity to 20 per cent or more. This means, of course, that the vapor pressure inside of the home will be higher than that outside. Because of the higher water vapor pressure within doors there will be a constant out leakage of water vapor, the amount depending upon the tightness of windows and doors, the permeability of the wall materials, and upon other factors. If doors and windows are loose, water vapor will pass out readily and if tight the leakage will be minimized.

Winter air conditioning means, among other things, maintaining a humidity in the home at some established value intended to be better suited to health, comfort, and protection of woodwork than the normal humidity just described. With winter air conditioning the relative humidity may often be 40 per cent or higher. The humidity may be controlled automatically with a hygrostat, in which case it will be relatively constant, but without such control the humidity may fluctuate considerably.

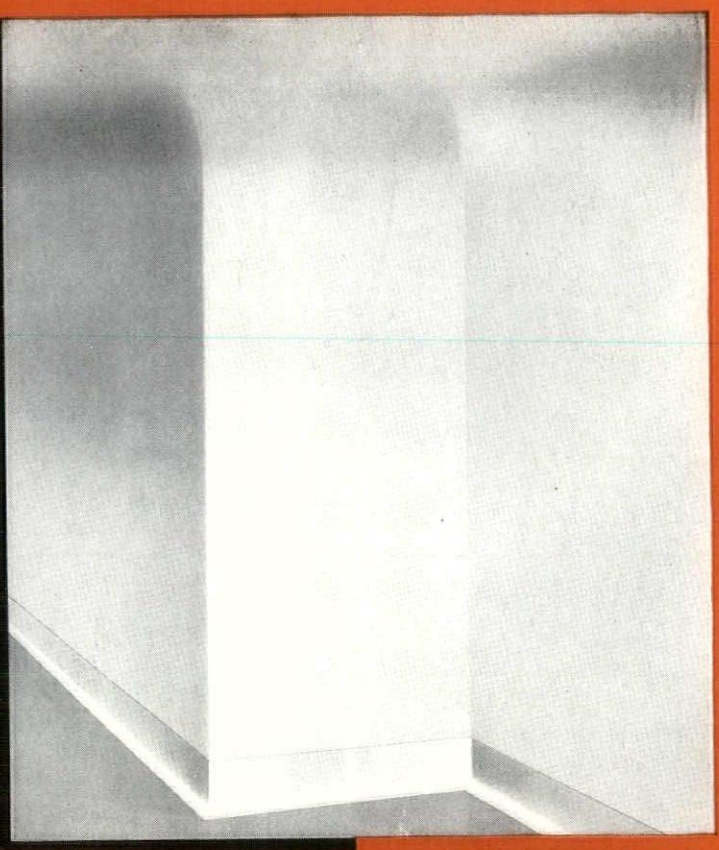
The effect of the humidity or vapor pressure on condensation can be understood by examining figures 1 and 2. Figure 1 illustrates a typical frame wall of lath and plaster, studs, sheathing, sheathing paper, and wood siding. Figure 2 illustrates a wall similar in all respects except that the stud space is filled with insulation. For purposes of illustration the following examples have been chosen: One indoor temperature of 70° F.; three outdoor temperatures of 20° F., 0° F., and -20° F.; and three indoor relative humidities of 40 per cent, 30 per cent, and 20 per cent. When the temperature of the room side of the sheathing is above the dewpoint temperature in the room no condensation can take place within the stud space. When, however, the sheathing temperature falls below the room dewpoint a different set of conditions prevails. If, in figure 1, the lath and plaster offered no resistance to the passage of vapor, condensation could take place on the sheathing with the latter exactly at the room dewpoint. The amount of condensation would be limited only by the ability of the sheathing to function as a condenser and the permeability of the sheathing to water vapor. Since the lath and plaster do offer some resistance to the passage of vapor, the vapor pressure within the stud space will be less than that within the room whenever there is vapor movement through the lath and plaster. Actually, therefore, condensation cannot take place within the stud space until the sheathing temperature is appreciably less than the room dewpoint. When condensation is actually taking place on the sheathing, the vapor pressure within the stud space will be largely determined by the sheathing temperature and will, in general, correspond rather closely to saturation pressure at this temperature. The three jagged lines marked "temperature" show the temperature gradients from one side of the wall to the other for the three chosen conditions. The three dashed horizontal lines marked "dewpoint temperature" serve to locate the dewpoint temperatures for the foregoing three indoor relative humidities. The water vapor pressures corresponding to these dewpoints are also marked on the respective lines.

Comparing figures 1 and 2, it is at once evident that, within the stud space, the temperature gradients are much steeper in figure 2 than in figure 1, and that the respective sheathing temperatures are much lower in figure 2 than in figure 1. This results from the addition of insulation in figure 2. Because of the lower sheathing temperatures condensation will occur on the sheathing with lower room humidities when insulation is used than when it is not used. Conditions within the walls are actually more complicated than the drawings and examples indicate, because they are not static, and matters of heat balance and rates of water vapor movement and air movement have important effects upon what goes on.

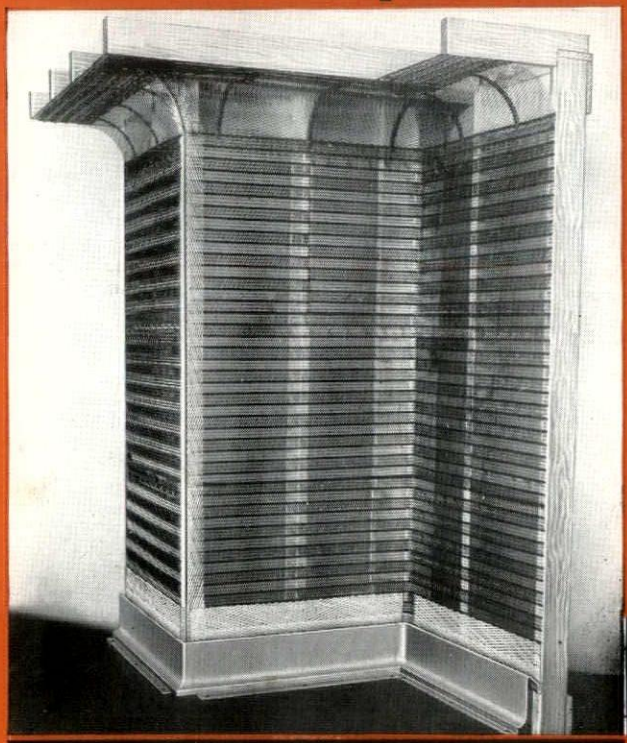
Referring again to figure 1: When the relative humidity within the house is 40 per cent the vapor pressure is approximately 0.289 of an inch. The temperature gradient through the wall when the outside temperature is 20° below zero intersects the room side of the sheathing at about 26° above zero and, assuming saturated air at this point, the vapor pressure there will be only about 0.137 of an inch. This difference in vapor pressure will cause vapor to move from the room through the plaster to the stud space and condensation will develop in this space. This condensation will eventually appear as frost or ice on the sheathing, which is below the freezing point.

(Continued in June issue)

Today, clients like *coves*



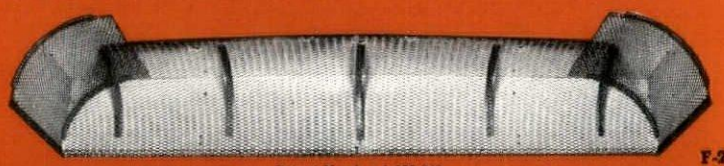
—so MILCOR presents a practical cove *lath* that gives them what they want—and saves time on the job . . .



Now you can lay out plaster coves — the current vogue in interiors — without a great deal of fussy, expensive hand labor on the job. The craftsman now can produce perfect mitred corners with coves.

The new Milcor Cove Lath is ready to install. It becomes an integral part of the interlocking web of steel which insures permanent beauty for your plaster interiors.

Form and texture isn't the whole story on plaster. It's a *structural* problem, too. When you specify Milcor metal lath and accessories, you know the job will be a credit to your office for years to come . . . Write for new free bulletin on Milcor Cove Lath today.



Patent Number 1,975,242

F-2

MILCOR STEEL COMPANY

MILWAUKEE, WISCONSIN CANTON, OHIO

Chicago, Ill. Kansas City, Mo. La Crosse, Wis.

Unit of the MILCOR SYSTEM OF FIREPROOF CONSTRUCTION

Milcor here uses the word "system" in its true sense—not to signify a limited, inflexible set-up applicable only under certain conditions, but to represent so great a range of individual products, types, weights, metals, etc., that a *complete, coordinated metal backbone* can be designed to suit any condition of fireproof construction—all with Milcor products engineered to work together.